

Aviation News

McGraw-Hill Publishing Company, Inc.

JUNE 17, 1946



Helicopter Sprayer: *Experimental use of the Bell Aircraft Corp. Model 47 helicopter, for crop-spraying and dusting near Yakima, Wash., may be followed by widespread use of the rotary-winged aircraft for similar pest control projects. The downdraft from the huge rotor is regarded as ideally suited for dusting and spraying projects, and the ability of the aircraft to hover over a given area until it is thoroughly treated is another unique asset of the helicopter in this work.*

Unscheduled Carriers Fight Full Federal Control

Most agree with CAB tenets but oppose drastic definition and 10-trip limit.....Page 7

War Production Skills Disappear in Reconversion

Unit costs almost doubled since V-J Day; solutions sought by companies.....Page 15

Aeronca Challenges Piper Lead in Plane Production

Two-place *Champions* rolling out at 33-a-day rate; Vandalia Chief line hits a 5-a-day...Page 23

Vast Feeder Network Seen as Result of CAB Decisions

In prospect are 25,000 route miles in 42 states; also expect 25 new local carriers.....Page 28

For EVERY point where fire may start...



Engine? Kidde carbon dioxide systems put flames out in a hurry.

Cabin? Auxiliary equipment? Kidde portable extinguishers... lightweight... trigger-operated... smooth operation fires before they can grow.

Baggage and cargo compartments? Kidde smoke detectors flash a warning signal. Kidde systems or portables snuff out the blaze.

It's Kidde, nose to tail, on most of America's famous transports. Airlines and plane manufacturers interested in this smooth fire protection are assured to discuss their problems with Kidde.

Walter Kidde & Company, Inc.
620 Main Street, Belleville 9, N. J.



By word, Kidde speaks its name and the name of Walter Kidde & Company, Inc.

Kidde

THE AVIATION NEWS

Washington Observer

DIFFERENCE IN TECHNICAL LEVELS—German scientists brought by the AAF to Wright Field to carry on scientific work for the U. S. say they are keen on it, but they object so strongly to working for the U. S., but they cannot that their work in Germany was on a technical level so much above current developments at Wright Field that no one understands them. Similarly, the German test pilot brought over to fly the jet-propelled Me-262 is thoroughly convinced of the superiority of his aircraft to any American planes he has been permitted to see.

CAD AND SUPPLIES—An unexpected stomach of CAD's non-scheduled aircraft may be a drop in sales of surplus aircraft to non-scheduled operators if the proposed amended exemption order goes through as written. The order would require CAD approval of items to certain from any Government agency. Operators have been buying surplus aircraft on installment, giving War Assets Administration a mortgage for the balance. Those items would have to be cleared with CAD which, according to qualified observers, is not set up to handle such a volume of business.

RESEARCH QUALIFICATIONS—Unprejudiced observers say one of the weakest points in the AAF's case for additional appropriations for a rapid-development program for military aircraft is a combination of the old officer-seniority system and its associated biases. Some of the development chiefs at Wright Field and other centers are competent in the subject they direct. Too many, however, have been appointed solely because of seniority, over the heads of other capable

officer and civilian engineers who carry the real load. In the past, this inequality has been coupled too often with the transfer of capable officers from research projects as soon as they had completed a "year of duty," to new assignments for which they were not particularly fitted. Observers see a quick transfer or retirement of most senior officers and long term assignments of capable officer-scientists as necessary prerequisites of a business-like, efficient AAF development program with tangible returns.

RUSSIAN POLAR EXPERIMENTS—Announcement of Russia's resumption of polar exploratory flights—made from its military interest—meets the long transpolar flights by a Russian single-engine plane in the middle districts. It took off from near Leningrad and landed near San Francisco, making the loop, it was claimed, non-stop. Some time later, however, Navy intelligence officers uncovered what they took to be proof that the Russians actually had landed for refueling at a secret, secluded Arctic air base.

BREWSTER'S QUIZ RIZZLES—Talk earlier this year in the Senate Commerce Committee of an investigation to determine the extent—if any—to which political pressures have influenced CAD route awards has died down. The idea was proposed by Sen. Owen Brewster, prominent critic of the Administration's economic aid policies. Up for election this year, Brewster's campaign activities rule him back to his home state during the brief intervals when his attendance in Washington is not preoccupied by major Senate business.



Small flying wing fighter built experimentally for the AAF by Northrop Aircraft Co. is designated XP-79. Among the plane's "first" and distinctive features are that the pilot has room to enable him to with-

stand 12 G's on pullouts, and that this is the first U. S.-built flying wing to be powered by jet engines—the Westinghouse J5-Bs. The aircraft was designed as a regular fighter, carrying four machine guns.

HANGAR FLYING

LOCKHEED



THE WET LOAD

The first cargo carried by the *Conquestaire* was just about) via a four-inch fire hose. It consisted of 88 tons of water. This doesn't sound like a very intelligent choice of payload, but under the circumstances it was.

When Lockheed engineers first took NA 61 (the test *Conquestaire*) into the air, they wanted to know how the ship reacted to shifts in its center of gravity. So they originated and installed a system of water ballast tanks. The interior of the cabin looked like a cross between a bathroom stall and an aquarium.



By merely turning various valves, engineers could shift a ton or two of load from here to there in flight. Much easier than juggling suitcases around, and a lot more accurate. And since flight test costs on the *Conquestaire* run to about \$6200 an hour, the system more than paid for itself by speeding up the whole test program.

This rig, another example of the old Lockheed axiom, proved to engineers that the *Conquestaire* is a remarkably stable plane. More so, in fact, than any other large transport

L to L for L

© 1981 Lockheed Special Dispatches, Boston, Lockhart

AVIATION NEWS

THE STAFF

ROBERT W. MORRIS... Editor
ROBERT B. BLOOM... News Editor
MELVIN H. MCKINLEY... Technical Editor
CHARLES L. AMAR... Proofreader
WILLIAM KADDER... Special Assignment
BRYAN FRIEDMAN... Special Assignment
ROBERT BLOOM... Proofreader
ALEX MCGRATH... Photo Editor
KATHLEEN JOHNSON... Copy Editor
HILLY FOWLER... New York Editor
HARVEY ALLEN... Editorial Assistant
DANIEL MADDEN... Art Director

ROBERT F. BLOOM... General Manager
ROBERT W. MORRIS... Editor
DAVID J. HENNINGER... Editorial Assistant

CONTENTS

| | |
|---------------------|----|
| Washington Observer | 1 |
| Industry Observer | 2 |
| Headline News Items | 3 |
| Special Air Service | 11 |
| Performance | 21 |
| Power Plant | 27 |
| Transport | 28 |
| Editorial | 34 |

Editorial Assistant
ROBERT BLOOM
Washington, D.C.

Editorial and Executive Office
120 W. 42nd St., N.Y.C. 36, N.Y.

Public Office, 411 E. Main St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

Editorial Office, 1000 W. 10th St., Los Angeles

News at Deadline

AAI Supports Research

Aircraft Industries Association last week set forth the industry's official position on plans for a new, giant supercomputer research center to displace letters to Dr. George W. Lewis, Director of Research, National Advisory Committee for Aeronautics, and Maj. Gen. Curtis LeMay, Director of AAF's Research & Development. The industry will support the program, the letters read, as long as it conforms to the national aeronautical research policy set forth last March, and meets 10 specific requirements included in the letter. Among the requirements: Industry to be responsible for development of software, power plants, and propellers, to be done under financial assistance in non-Government facilities. "Facilities staffed and operated by the Government must be made available to industry under same conditions as general in privately-operated facilities. "Industry's development of non-Government facilities must be subsidized in accordance with industry's requirements." On the controversial question of construction or development, the industry recommends that strategic constraints and proximity to related facilities be taken into account.

Four X-15 airplanes are under construction at the Glenn Research Center, Cleveland, Ohio. The first complete X-15 airplane will be available for flight test shortly.

The 8-year-old official NAA maximum speed mark set by Maj. Alexander P. DeBerry was officially broken May 28 by Navy Capt. T. D. Dixon as a routine flight in a new Lockheed Nieuport PIV patrol bomber. The flight was made in 5 hours 25 minutes, clipping better than 25 minutes off the previous record.

TWA is now using a C-47 "Sky Lift" in Kansas City, Mo. The plane is being employed primarily for mail delivery.

Four X-15 airplanes are under construction at the Glenn Research Center, Cleveland, Ohio. The first complete X-15 airplane will be available for flight test shortly.

TWA is now negotiating for four or five McDonnell Douglas transports for Ethiopian Airlines, to which it is lending technical advice and assistance.

International Survey

Postmaster Robert E. Henningsen and Second Assistant Postmaster General Carl Sullivan will leave shortly for a world flight during which they will observe at first hand problems relating to a reduction of international postal rates. They will be accompanied by W. Stewart Symington, Assistant Secretary of War for Air, and Senator Seymour J. A. Kras, and Sen. Clifford Byrd (D-Ill.).

Northwest Buys 200's

Northwest Airlines announced last week an order for 18 Martin 382's at a cost of \$2,560,000, for use on all its domestic routes. The order came a few days after the company had purchased 40 Martin 362's at a cost over \$15,000,000 (see story in Transport Section). The order, and brought to more than \$27,560,000 the total cost of three separate fleets Northwest Airlines has ordered since the first of the 1960's.

James M. Lando probably will be sworn in this week as successor to L. Whitt Page, Chairman of Civil Aeronautics Board.



Variable pitch propeller designs are leading the "welcome" mat awaiting them at the doors of civil engineers of major White House plans having personal airplanes under development. The plane builders are working carefully to coordinate plans of buying undeveloped plans for their exclusive use, and against the payment of all royalties for use of propellers already created and now on the market.

James G. Ray, vice president of Southwest Airways, West Coast feeder route holder, doubts if his company or other feeder airlines will be able to obtain a "separate" flight equipment for less than two years. In comparison with other companies now under development, the DC-8 equipment for company will use its entire service in "jets too old", he says.

Aero-Texas Aircraft Delivery, has been established at Grand Central Air Terminal, Burbank, Cal., offering delivery service for planes from factory to consignee on a per mile charge. All ships accepted for delivery are insured, flown only in contact weather, and are covered with marking tape on seats, steps, doors and panels in protection from wear and tear.

The 8-year-old official NAA maximum speed mark set by Maj. Alexander P. DeBerry was officially broken May 28 by Navy Capt. T. D. Dixon as a routine flight in a new Lockheed Nieuport PIV patrol bomber. The flight was made in 5 hours 25 minutes, clipping better than 25 minutes off the previous record.

TWA is now using a C-47 "Sky Lift" in Kansas City, Mo. The plane is being employed primarily for mail delivery.

Four X-15 airplanes are under construction at the Glenn Research Center, Cleveland, Ohio. The first complete X-15 airplane will be available for flight test shortly.

TWA is now negotiating for four or five McDonnell Douglas transports for Ethiopian Airlines, to which it is lending technical advice and assistance.

American Airlines representatives visiting business for the company's new contract are the day division are quoting a new low rate of 11 cents per mile for Los Angeles-New York shipment in 25,000 lb. maximum line. The Kansas, Cal., letter, structure, and trucking rates are actually entered in developing of cargo shipment design the present high cost for any other but previous shipment. Forty thousand of shippers (in the west) for the Los Angeles market, on the West Coast, United, and American. It is this rate the represents maximum knowledge of possible freight on the Santa Fe railroad, which expects to start air cargo service soon.

SLEA, Swedish International Airlines, flew a DC-4 non-stop New York to Stockholm in 15 hours and 25 min. for what it claims is a new world record with a capacity of 41, the ship carried two passengers, a loaded elevator for Douglas, and a computer for the airline. A specially modified fuel tank in the fuselage carried 400 gallons of gasoline, bringing total fuel load to about 4,000 gal. or 12 tons.

An AAF developed 12,000-pound controlled glide bomb is slated for testing this month, according to Brig. Gen. Laurence Craigie, Chief, Engineering Div., Wright Field. Testing before the Mitchell Subcommittee in the Senate, Craigie declined to "own" certain a gun" on the degree to which it might be found possible to deliver the bomb. A 1,000-pound controlled glide bomb, dropped at 15,000 ft., can be delivered 1,500 ft. Craigie reported. Because of its weight, the 12,000-pound bomb will not even approach this degree of deflection. He also reported that AAF is producing 11 TC-90s, with 3,500 lb. engines, and can limit the report that production on the B-66, the largest bomber ever produced by the AAF, is scheduled to start in January. Initial cost will be put through flight tests within the next month.

James M. Lando probably will be sworn in this week as successor to L. Whitt Page, Chairman of Civil Aeronautics Board.

PASSENGER TRANSPORTATION

... just one of many uses



Anywhere, at any time, in almost any weather, the versatile Sikorsky S-51 helicopter carries passengers, on business or pleasure, swiftly and directly to their destination.

Landing the way into this newest and most exciting means of transportation, Sikorsky helicopters are now available for a wide range of passenger-carrying opportunities. Ideal for executives, maintenance crews, medical or first-aid workers, or use for charter, bus, taxi or personal service—these are just a few among the many uses of the Sikorsky S-51.

SIKORSKY AIRCRAFT

DESIGNERS, MANUFACTURERS

ONE OF THE FOUR DIVISIONS OF UNITED AIRCRAFT CORPORATION

Unscheduled Carriers Determined To Fight Full Federal Control

Most agree with CAB principles in recent decisions but oppose drastic definition and 10 trip monthly restriction.

By WILLIAM KROGER

While fully determined to continue their fight to escape full economic regulation, the unscheduled operators to a surprising degree give approval to the principles set forth by CAB in its future-directed actions on unscheduled service (AVIATION NEWS, June 10).

In the main, operators' sympathies with CAB are centered only with the situation defining the drastic definition of unscheduled operations, and not with the actual effect of the definition. There is great admission that many operators were "having behind" performance and up generally solely for food base questions.

By laying down a clear-cut policy on what constitutes irregular operations (see certain number of days a day or a week between given periods), it is felt CAB has wiped out hypocrisy. But at the same time, operators in widespread that CAB has also wiped out the future of many sincere unscheduled operations.

Ten Trips Are Issue—Most industry attention is centered on three aspects.

CAB's definition, which was reported fully last week.

The proposed amended exemption order which would limit flights between two points to not more than 10 round trips a month.

The Board's seemingly unnecessary emphasis on the fact that non-scheduled operators are not exempt from compliance with labor legislation.

Operators seemed willing to accept the definition but felt that the limitation of 10 trips would not permit unscheduled services to continue today as an industry. There must be other measures, such as insurance, better service, to help carry the overhead.

With less than a month—until July 22—to submit to CAB com-

ments on the proposed amended exemption order, the groups active in opposing economic regulation are setting their sights on the 10 trips per month service. National Aviation Travel Association, Aeronautical Transport Society and the National Aeronautic Association have already condemned that feature. All feel optimistic that the limit can be raised, but others observe believe that is a dim hope in view of the Board's restrictive definition.

Employing Labor—Regarding the emphasis on compliance with labor legislation, few operators seem to have realized that they were never exempt from that section of the Civil Aeronautics Act. The Board pointed this out forcefully. Operators now are wondering if this is a prelude to an investigation to seek out violators.

The applicable section of the Act

demand conformity to section 83 of the National Labor Board. This sets monthly maximum flying hours at 85, a yearly base pay of \$1,600 with annual \$300 increase up to a \$3,900 maximum, and hourly pay beginning at \$4 and graduated upward according to speed of aircraft flown.

On the result of having to meet those scales, operators are divided. Some of the most experienced, however, declare this will not mean a great increase, unless flying hours—now generally between 50-60 a month—are applied considerably. It is pointed out, however, that a major increasing job is entailed for those operators now doing charter and instruction. Although a legal opinion has not been forthcoming it is believed that for the purpose of calculating flying hours coming under Decree 83, a pilot's pay for instruction can be figured as a separate base from charter flying.

Looking a ray of hope to the situation, many operators feel that the Board in promulgating its definition indicated that now more certificates would be granted on small applications. Their belief rests on the assurance that the unscheduled carriers were trying to blanket the country with the type of local service the Board has often said is desirable. Under the Board's definition, unscheduled carriers can no longer provide such widespread service. Something, they feel, will have to take its place.

Texas Ruling Limits Functions of Air Firms

Corporations chartered in Texas to deal in airplanes, operate them for passenger or freight service interstate, intrastate or international cannot be also chartered to conduct flying or airplane mechanics schools, according to a ruling of Atty Gen Grover Bell.

The corporation involved in the opinion originally was chartered as a dealer in planes, authorized to operate schools for carrying passengers and freight, to buy and sell, wholesale or retail aircraft engines, instruments and paraphernalia. It was



ELDON PLAQUE:

Defendant of Elton (No.) Hotel Airport, last week, was awarded by the presentation of the above plaque to the owners of the little Missouri community, from the Personal Aircraft Council (Aircraft page).

also authorized to sell fuel and grease for airplane engines and maintain whatever repairs necessary to render its business viable. The corporation sought to amend its charter by inserting the phrase "to assist persons in flying and in the maintenance and construction of aircraft engines."

Such instruction, open to the public, would set up the corporation as an educational institution and create a dual purpose for it: the attorney general wrote.

First Ram Jet Flight Made in Navy Tests

Thunderbolt exhaust pipe closes air at 1,500 mph. over New Jet jet 3,000 hp. developed.

Official revelation of Navy Department enthusiasm for the ram jet method of aircraft propulsion focuses attention on the simplicity and great power of this new engine, leading to speculation concerning its future possibilities.

Navy last week announced the successful completion of the first stage of its investigation, a working model which as the result of collaboration between the Navy Bureau of Ordnance, Johns Hopkins University Applied Physics Laboratory and more than twenty industrial organizations and universities.

The model, which as part of a missile made its first successful flight on June 18, 1946, at Island Beach, New Jersey, weighs only 70 lbs. but drives through the air at a

speed of up to 1,500 miles per hour. It consists simply of a properly shaped tube with a method of fuel injection and contains no moving parts. The first test unit was made merely from the exhaust pipe of a Republic P-47 Thunderbolt, jet developed 3,000 horsepower.

Promise of New Speed—Engineers believe that just as the turbo-jet engine begins where the reciprocating engine leaves off so the ram jet engine comes on into the speed range from a point where the turbojet engine begins to lose power. This promises an extension of the aircraft speed spectrum well into the supersonic range.

Although this is properly the realm of greatest confidence for rocket power, the latter said easily as soon oxygen. In the German V-2, for example, the oxygen amounted to 2½ times its weight which might more usefully be allocated to explosives. The ram jet engine claims no exclusive feature in that, requiring far less oxygen than a reciprocating engine, it operates directly from the atmosphere drawn into its nose, thereby making it useful at all altitudes up to 50,000 ft.

The ram jet engine is ideal for propelling guided missiles because of its tremendous power and extreme light weight and simplicity. Also, it is relatively expensive to build, making it uneconomical for use in expendable weapons.

Launching Needed—A disadvantage of the ram jet is the necessity for its achieving a high speed before developing sufficient propulsion power. This problem has been solved in two ways: by the use of



rocket engines. With no moving parts, and arranged at both ends, the new jet model (see below) by the Navy weighs but 70 lbs. More work is now being done for flight (Navy photo).

rocket-powered launching mechanisms, and through launching from a high-speed bomber or fighter plane. The engine gets its name from the fact that its own momentum runs in the air at sufficient force to compress it. This indicates that greater speed provides greater force and, therefore, greater power which results in more speed.

Nonsecret investigation, private companies and both the Army and Navy are now at work on the application of the ram jet principle to larger engines and to various forms of aircraft and missiles. One leader in the field at present is the Maryland-based Aerojet Corp. Vance Chief (Aviation News, March 31) saw at work on advanced ram jet engines for the Navy.

Jets in 1951

Pratt & Whitney division of United Aircraft Corp. will continue contribution in redeveloping engines for at least five years, believing that in that period, at least, jet propulsion, ram jet, and other new power devices will not supplant conventional power plants.

P&W's attitude was reported last week by C. B. Allen, aviation editor New York Herald Tribune, on the strength of interviews with Frederick H. Bentschler, United chairman, and H. M. Hoerner, president. (For other news on jet, see Production.)

Navy Funds Slashed By Senate Committee

Over the protests of Naval air officers, the Senate Appropriations Committee last week announced House action in cutting back Bureau of Aeronautics' fund for come-year overall procurement from the \$330,000,000 recommended by the Bureau of the Budget to \$293,000,000.

Vice Admiral A. W. Moffat, Deputy Chief of Naval Operations, and Rear Admiral H. B. Rollins, Chief of BuAer, objected that the \$23,000,000 trim would necessitate reduction in BuAer plane procurements from 1,580 planes to 1,551—a reduction of 20 per cent.

BuAer's 1,350—plane—program consisted of 334 fighters, 390 dive bombers, 34 observation scouts, 47 bombardier level bombers, and 25 airplane patrol bombers.

In reporting out the 1947 fiscal year Navy Department appropriation bill last week, Senate Appropriations Committee made only one minor change in House-approved allocations for BuAer: it added \$2,000,000 for procurement of synthetic aviation training devices. This raise boosted BuAer's total come-year appropriation from \$320,500,000 approved by the House to \$322,500,000.

As passed by the House and recommended by Senate committee, the bill provides BuAer with \$300,000,000 for research and development (including \$200,000 for experimental plane types) and \$120,000,000 for engine development; \$261,200,000 for operations and maintenance; and \$33,000,000 for procurement, and \$215,000,000 for aircraft procurement.

He 1947 fiscal allocation will not only drastically outstrip BuAer from its war time peak, but will also drop BuAer from the dominant position which the Navy Department held during the war years.

In a lend-of argument before House Appropriations Committee justifying a larger 1947 fiscal year BuAer appropriation than presented by the Bureau of the Budget (Budget allowed \$293,000,000, BuAer wanted around \$1,200,000,000), BuAer officials compared the relative strength of BuAer within the naval establishment during the war years with its proposed relative strength during the coming year.

The evidence is that BuAer activities are being outstripped greatly out of proportion to the overall cut-

backs ordered in Naval activities.

During the war, 40 per cent of all naval appropriations were funneled into naval aviation. In the 1943 fiscal year, naval aviation will receive about 17 per cent of the total Navy Department appropriations. Total Navy appropriations will be in the neighborhood of \$1,690,000,000. BuAer's share, in the neighborhood of \$310,000,000.

During the war, the 425,400 officers and men in naval aviation accounted for 40 per cent of the total personnel of the Navy. The planned naval aviation personnel force for the coming year, 30,413 officers and men, will amount to only around 10 per cent of the planned naval personnel strength of 300,000.

Senate Votes Switch In Aviation Control

A shake-up in committee handling aviation legislation was approved by the Senate last week when it passed the La Follette-McCord bill streamlining Congress by a 40 to 10 vote.

The bill would:

- Abolish the Senate Commerce Committee, which now has jurisdiction over civil aeronautics, and transfer jurisdiction over civil aviation over to a new committee on Interstate and Foreign Commerce.
- Merge the present committees on Military Affairs and Naval Affairs into a single Committee on the Armed Forces.

The proposed Committee on Interstate and Foreign Commerce would have jurisdiction over all forms of civil transport and communications—both domestic and foreign. Its membership would probably be drawn from the present

membership of the committees on Commerce and Interstate Commerce.

Sen. Burton Wheeler (D. Mont.), now chairman of Senate Interstate Commerce Committee, would become Sen. Joseph Bailey (D. N.C.), now chairman of Senate Commerce, for chairmanship of the new Interstate and Foreign Commerce Committee, because of his higher security rating. Sen. John Overton (D. La.), acting chairman of Senate Commerce during the illness of Sen. Bailey vigorously protested the bill's provision abolishing the committee which he felt is in line to lead permanently.

The bill is now subject to House approval. Senate approval came as a complete shock to several Washington observers who calculated that powerful senators, leading constituents, would never permit legislation to go through abolishing their committee, and making a deep thrust in their power.

Mead Committee Asks Air Engineers' Center

Plans of the National Advisory Committee for Aeronautics and the Army Air Forces for an Air Engineering Development Center "should be completed expeditiously," Senate's Mead War Investigating Committee recommends. (Aviation News, March 31) saw at work on advanced ram jet engines for the Navy.

The center would cost an estimated \$1,930,000,000. AAF plans call for an approximate appropriation of 30 per cent of the total cost, or \$579,000,000. 20 per cent of the cost, or \$398,000,000 in the second year, and 25 per cent of the cost, or \$482,000,000 in the third and fourth years. Under this schedule testing



"Flying Stovepipe": Made from the tailpipe of a P-47, this working model of a new jet engine is the first ever flown. It was developed by the Navy's Bureau of Ordnance, the Applied Physics Laboratory of Johns Hopkins University, and its associated industrial organizations. Application of the ram jet principle to ram or achieving better results for jet-propelled, high-altitude flight than jet, or its allied forms of propulsion. (Navy photo)



FOUR-ENGINE FEEDER:

Believed to be the first piston four-engine plane of its size to fly, the British-built Miles Mustang prototype carries 16 passengers on 600-mile flights, 18 passengers and 125 lbs. of freight as long as 1,500 miles. Although the engine are small (130 hp. each), the use of four is designed to eliminate danger inherent in failure of one engine on solo-flight, which change present is the two-engine approach. The Mustang can take off on three engines. The Mustang exemplifies a new trend on the part of British designers to use four engines on all transports.

New Rocket Panel To Smooth Discords

Joint Army, Navy, civilian group will coordinate V-2 firing tests in New Mexico

Formation of a joint Army-Navy-Civilian V-2 Rocket Panel points toward solution of the various inter-service differences over responsibility for scientific experiments with 25 captured V-2s launched to the country.

The panel is under the chairmanship of Dr. R. H. Keesee, head of the Rocket Seeds Research Section, Naval Research Laboratory, Washington, D. C. It comprises representatives from the Army Air Forces, Army Ordnance Department, Army Signal Corps, Navy Bureau of Aeronautics, Navy Bureau of Ordnance, Naval Research Laboratory and numerous universities.

Of almost equal significance as the formation of the panel, is a new procedure adopted under which future V-2s test fired for the first time will be thoroughly investigated in order to give readings on the conditions in the upper atmosphere.

Agree On Policy.—A broad policy has been agreed upon which will provide each of the groups an opportunity to plan and conduct its own individual experiments. By allocating a specific number of V-2s to each of the groups and by preparing a schedule of firings, approximately six every two weeks, the new panel has eased most of the friction associated with the problem of V-2 control and has distributed the opportunities equitably.

The first fully instrumented V-2 launching is scheduled for June 27. This firing is a World Research Laboratory project. Firings on July 9 and July 19 will be under the direc-

tion of the General Electric Co., working under contract with the Army Ordnance Department. On July 28 the first firing will be under the direction of the Johns Hopkins Applied Research Laboratory, working under a Navy Department contract. The August 22 firing will be handled by the University of Michigan, which holds an NSF contract. The cycle will then be repeated in the same order.

Each of these agencies will be in complete charge of the instrumentation of their individual rocket and will select, develop and install the particular equipment required for the test. An important function of the panel is to coordinate the instrumentation to insure that no space is wasted in such V-2 work.

Firing at White Sands.—All firings will take place at the launching site at White Sands Proving Ground, New Mexico where the captured V-2 rockets are being assembled. Two firms have been completed to date. Both of these were primarily to determine launching methods and to provide information on stability and control of the rocket in the air. The June 27 firing will be the first fully instrumented V-2 launching. The Germans were elevated before their plan for such tests advanced beyond the preliminary stage.

The Naval Research Laboratory has prepared a special warhead, the exact shape and weight of the original, containing transfer equipment to transmit information on air pressure and density, ultraviolet ray count, rays and ionosphere density from the 100-mile altitude expected to be reached. Such simple and complex instruments as Geiger counters, spectrophotometers, radiation thermometers, etc., are connected to a 25-channel telemetry transmitter through which readings are ob-

tained on the ground by observers. **Fast Readings.**—Due to the 2,000 m.p.h. speed and 400° C. temperature of the V-2 upon impact with the ground, only 28 to 30 lbs. of fused metal remains after the landing. The more than 500 readings that are necessary must be obtained during the three minutes the V-2 is above the atmosphere.

Laboratory scientists from these tests categorize both basic and applied research data with useful applications, some of immediate concern. Data on the warhead will be available to permit research on electronic test radio problems, most particularly on long-range radio transmission and reception in the broadcast band. Pressure and temperature data, the first ever obtained beyond the atmosphere, will provide data for the design of high-altitude aircraft and guided missiles. Cosmic ray data will carry science beyond cosmic factors in the search for the basic nature of matter.

Bendix Spends \$18,000,000 On Jet, Missile Research

Bendix Aeronautics Corp. spent \$18,000,000 on research and engineering in the field of jet engines last Sept. 30, the fiscal president, Ernest R. Borch, has reported to stockholders.

Much of this, presumably, was in the field of jet propulsion and engine development. Borch declared "these newer types of motive power require so many components and accessories such as fuel metering system, control and instrumentation in accompanying engine research."

An intensification of Bendix research and other work will require that year almost twice the previous manufacturing output.

Supersonic Research Is Key To Jet Engine Progress

More compact and efficient jet engines can be expected as a result of the new knowledge of supersonic aerodynamics now being acquired. Dr. J. C. Hunsaker told the National Academy of Sciences recently. He said that present jet planes were basically conservative designs that deliberately avoided the problems of supersonic speed because of the lack of knowledge in this field. With the acquisition of supersonic data and further research to produce jets that operate at higher temperatures, marked increase in the efficiency of jet engines will be possible, he predicted.

SPECIAL AIR SERVICES

CHARTER NON-SCHEDULED INTRASTATE

Non-Scheduled Services Expand Despite CAB Regulation Threat

Week's developments marked by suspension of only one carrier and announcement of new companies and additional operations by others.

As in previous weeks, new companies and expanded operations by those already flying for scheduled commitments in the non-scheduled field following announcement of more rigid controls to be placed on the industry by the Civil Aeronautics Board and the Civil Aeronautics Administration. Only one company announced it was discontinuing service in 1946.

Other developments of the week included these:

Ship Supplied by Air.—Air Cargo Transport Corp. is to deliver a truck of Northridge's new Pasadena, Cal., fashion shop to the west coast. That of women's wear hanging from gloves to dresses have been transported across the country in the past two weeks, "to get a new mark in fashion shipping." The company's C-47s regularly drop on their backs, even packaging time, material, and pressure. Northridge officials were quoted as saying they would no longer be in use of air freight that they would do the bulk of shipping by this means hereafter.

Mercury Interceptor.—Mercury Transportation Corp. has been incorporated in Delaware as a non-scheduled air carrier, with registered offices at 25 Broad St., New York. Officers are Andre de Saint-Paul, of Andre de Saint-Paul & Co., 10 Broad Street, New York, president; David C. Moss, partner in that company, treasurer; and C. W. Vossat, of Burlington, Wis., a director, at 44 Wall Street, New York. Secretary is Alvin F. Adams and associates of Lee Anglin are sitting at consultants. Adams being former president of Western Air Lines. A complete study of the non-scheduled air transport business is being made, according to David C. Moss, and no equipment purchases are planned until the operation has been decided upon, probably on a non-payment basis. While most of Mercury's air traffic is on Broad Street, Moss says it may be decided as a result of the study being made to maintain its headquarters in New York, Los Angeles, or possibly Chicago. No financial indication as to the shipping will be made available at this time.

Duracraft Airways, Inc., Houston, N. H., which began non-scheduled operations between Lebanon, N. H., and New York April 16, reports on average load factor of 89 percent during May. Present route, which is being flown with four Cessnas, serves New York via Teterboro, N. J., airport. Intermediate points are Claremont, N. H., and Springfield, Mass. Westfield, Mass., is a lay stop. Carrier originally planned to use two Cessnas in operation but volume of traffic exceeded expectations and two more planes were purchased.

Wicks, Kane Transport.—Wicks Air Route, which was established last October and now employs about 40 persons, has its first annual report officially planned to use two Cessnas in operation but volume of traffic exceeded expectations and two more planes were purchased.

Shipping Specials.—Almost Airways, Albany, Ore., has prepared six air shippers service to Alaska, and out departures since already has increased a well long shippers from the request to the zone, where they will be launching parts of the management.

Westco, Olsen.—Western Airways, which has been flying between Dallas and Tampa, with stops at Fort Worth and Chicago, has discontinued operations, according to announcement by Ralph J. West, manager.

Gulf Air.—Gulf Airlines has started weekly service to Boulder, Tex., from Houston. The company which serves 26 airports in the Houston area, is a division of Gulfstream and Co., Houston manager. Other week-end flights were established to Knoxville, a route.

Columbia Flies to Coast.—Columbia Air Corp., operated by three veterans, has started flight service between Portland, Ore., and San Diego, a 10-1/2 hr. flight by Jay Haworth, of Portland. First shipment was 200-lbs. of metal chairs, wood furniture, records, and women's suits valued at \$15,000, for Stiles & Frank, department store.

Hanna Service.—Delta Airways, Boston-based, non-scheduled carrier, has announced a series of summer routes to Hawaii from Boston and New York, costing about \$50 per passenger for a nine-day trip, excluding meals in Cuba.

Lucas Flys Grounded.—Lucas Air Freight Corp., 20 Fifth Ave., New York City, has been chartered as Defense. Papers were filed by Fitcher file.

Mississippi Airlines.—Three more commercial charter airlines in connection with the aviation industry were granted by Civilian Air Transport Board at Ottawa for operation in the north zone.

Shipping Specials.—Almost Airways, Albany, Ore., has prepared six air shippers service to Alaska, and out departures since already has increased a well long shippers from the request to the zone, where they will be launching parts of the management.

Westco, Olsen.—Western Airways, which has been flying between Dallas and Tampa, with stops at Fort Worth and Chicago, has discontinued operations, according to announcement by Ralph J. West, manager.



V-2 EQUIPPED FOR UPPER ATMOSPHERE STUDY

V-2 Superinstrumented. The newly-formed V-2 Rocket Panel has developed for the first time, a series of instruments by which upper atmosphere readings can be made during the test firing of captured German V-2s. This was a project the Germans never had time to undertake. Illuminances show the velocity and location of the instruments.



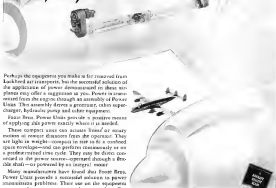
GIEN KILLERS SPEEDIED BY AIR

New team of DDT and 2,000 soldiers used for recent control in the recent loaded parachute operation in Japan and Corpus Christi, Texas, were loaded aboard three Air Corps Transport planes by the National Production for Japanese Paratrooper for rush shipment to the civilian areas (INS photo).



what lesson can you learn
from a mighty

Air Transport?



Perhaps the equipment you make is far removed from Lockheed air transports, but the successful solution of the application of power demonstrated in these airplanes may offer a suggestion to you. Power is transmitted from the engine through an assembly of Power Units. This assembly drives a generator, oiler supercharger, hydraulic pump and other equipment.

Basic flow. Power Units provide a positive means of applying drive power exactly where it is needed.

These compact units can operate fixed or rotary motion at remote distances from the operator. They are light in weight—compact in size to fit a confined space envelope—and can perform continuously or on a predetermined time cycle. They may be driven, controlled in the power source—operated through a flexible shaft—or powered by an integral motor.

Many manufacturers have found that Foote Bros. Power Unit provides a successful solution to power transmission problems. Their use on the equipment you manufacture may mean a better product. Our engineers will gladly work with your designers.

FOOTE BROS. GEAR AND MACHINE CORPORATION • 2121 S. WESTERN BLVD. • CHICAGO 5, ILL.

FOOTE BROS.
Builds Power Transmissions Through Battle Tests

A recently issued bulletin on Power Units giving complete engineering data on "Elements of power" will be sent on request. Also available is a bulletin on Aircraft Quality Gears. Write for your copy today.

PRODUCTION

Wartime Production Skills Disappear During Reconversion

Unit costs almost doubled since V-J Day as general decline in manufacturing affects aircraft industry; solutions sought by companies.

The many astounding efficiencies achieved by the aircraft manufacturing industry during the war are rapidly disappearing as a result of reconversion to small quantity lot production. Reports from engineers indicate that unit costs have nearly doubled since V-J Day despite repetitive economy measures in production.

Wage Skips. "The aircraft is back of real quantity production. Mass production's large economy is a major economic premise and it was the fundamental law of work on the production line during the war. Now the other factor, that created the abnormally high figure of 96 efficiency in per employee and the equally low airplane cost of less than 15 per lb. Present estimates estimate that employee output has dropped to an average of less than 10 lb. and that airplane costs have risen to \$25-30 per pound.

Psychology Declines. Several other factors enter into the overall picture of efficiency. Individualism and the "win the war" psychology have completely disappeared, and the resulting let-down in the intensity of individual effort is evident. Sub-contracting has fallen rapidly from its wartime peak of nearly 40% airplane production to around 15% or less thereby depriving the industry of individual sub-contractor's efficiency through specialization.

A high proportion of wartime tooling, which has been passed on the greatest single factor contributing to high production, has disappeared and with it gone production efficiency.

Tooling for new models, particularly commercial, is much less elaborate, resulting in greater work on individual skill at the bench. Fabrication operations have deteriorated by as much as 15% in some cases with resulting emphasis on assembly technique and fabrication-as-assembly operations.

While this shift away from the prob-

lem of reduced personnel it places greater responsibility on the worker with its accompanying task-taking care and requires him to perform far more dissipated operations than during the war. Whereas as a worker was required simply to drill a hole in a given part during the war, he is now required to file and bore the part, install attaching clips and brackets, rivet it on assembly and install various wiring lines and struts.

Process Considered. Processes have been extensively curtailed due to reduced production quantities. Many castings and forgings are now milled from bar stock to save the cost of expensive molds, dies and patterns, which pay for themselves in large quantity production. Castable tool-venting, non-venting and metal stitching have been replaced by simple riveting to provide economy in the purchase and maintenance of expensive shop equipment. Many plastic assemblies

are being returned to covered sheet-metal design due to the saving in small quantities.

Most departments have been rearranged and consolidated where possible with resulting interferences in work flow patterns and increased variety of individual operations.

Rising labor and materials costs, increased manhours per airplane needed, shortening of new patterns and complications in individual worker's jobs have combined to double and triple the cost-per-pound of large aircraft.

General Cost Increase. This is exemplified by the general increase in aircraft costs associated with advanced design, which is accomplished by increasing complexity in aerodynamics, power plant and control equipment problems. These have multiplied research problems to the extent that the proportion of research to production employees is higher at present than at any previous time in aviation history, ranging as high as one research (mechanical, experimental and developmental) worker for every two production workers.

To combat these conditions, manufacturers are resorting to several solutions with varying degrees of effectiveness. First, every attempt is being made to simplify detailed structural design so that fabrication times and costs may be reduced as far as safety and strength will allow. Fabrication processes are

(Continued on page 26)



'COVERED WAGON' RAFT:

Next development of the AAP's Air Materiel Command experiments in air-sea rescue equipment is this 20-man rubber life raft, which is named "Covered Wagon" because of its shape. Carried aboard aircraft operating over water, the raft is so constructed that it can support the full complement of 20 men if one side is punctured. It is inflated with carbon dioxide.

UNIQUE GENERATOR DRIVE



G-E AIRCRAFT GENERATORS

... RELIABLE POWER SOURCES FOR PLEASURE PLANE OR TRANSPORT



Direct-current GENERATORS

First stage, G-E direct-current generators satisfy the power needs of the average single-engine aircraft. For heavier loads on multi-engine aircraft, two or more units can be used in parallel with voltage regulation. The type F-2 is rated 200 amperes at 30 volts and is available with speed ranges of 1500/3000 rpm or 2000/3000 rpm. Type B-1 is rated 300 amperes at 30 volts and is available in speed ranges of 1500/3000 rpm and also in 3000/3000 rpm. Type Q-1 is rated 500 amperes at 30 volts with a speed range of 1100/3000 rpm. All have a working air-pressure value of 6 in. Hg.

AC constant frequency GENERATORS

Lightweight, ac power systems, highly effective at high altitudes, are now made possible with G-E 400-cycle, constant-frequency generators. Capacities include 40 kva, 100/120 volts, 6000 rpm and 20 kva, 200/120 volts, 3000 rpm.

AC variable frequency GENERATORS

G-E makes two basic types of variable-frequency ac generators—a unit rated 500 amperes, 20 volts ac (10 amperes, 220 volts ac) 4000/3000 rpm, and one rated 10 kva, 200/120 volts (100-300 cycle ac) 6000/3000 rpm.

Gas turbine STARTER-GENERATORS

G-E also designs and builds gas-turbine starter-generators which deliver 600 amperes at 30 volts dc, 3000/1500 rpm. As a starter, the unit develops 330 in. lb torque at 1500 rpm, 100 amperes, 20 volts.

Double-dares VIBRATION!

First
Second

Intensifies this exclusive self-shift (1) sets up a cushion between engine and generator, absorbing on the over-pressure loads at maximum speed.

Intensifies this exclusive friction damper (2) absorbs "jabs the load" on transient vibration, limiting the vibration which reaches the self-shift, or holding the shaft against loadings.

Big reason why G-E aircraft generators perform consistently well is the overall protection we give them against the destructive effects of engine vibration. Shielded against a hazard which can—and does—shake apart less carefully designed equipment, these generators provide a source of electric power you can always depend on. They require less maintenance. They add an extra margin of safety in aircraft operation.

Whether you want a simple, low-output power source for a light plane, or a complex, high-output power system for a heavy, multi-engine ship, you'll be interested in the basic, "anti-vibration" features illustrated above.

Besides minimizing the transmission of small but continuous vibrations in engine speed to the structure assembly, the "shock absorber" inner shaft acts as a flexible coupling between the structure and engine. (Careful inspection of shafts by the Magnaflex method detects and eliminates flaws with flaws, cracks, or stresses which might create harmful stresses.)

Together, the flexible shaft and the vibration damper (mounted on its driving end), both exclusive G-E features, form a double-barrier against harmful vibration in the rotating assembly.

*Trademark reg. U.S. Pat. Off.

In addition to these primary safeguards, G-E aircraft generators are equipped with mounting flanges, forged of specially treated steel, to absorb pounding engine vibration. Thanks to a unique contour design, the flange is able to overcome high fatigue and static stresses.

Electrically Sound

Compensated short field windings in G-E aircraft generators permit transient overloads and sparkless commutation over the normal rated load range—an important feature in high-altitude operation. Moreover, by silver brazing the armature windings to the commutator and using glass insulation and Formers' wire throughout, we have raised the safe temperature ceiling for these generators—above it without increasing their size or weight.

Thousands of G-E aircraft generators of all types were used in the war under grinding service conditions. That they turned in above-average performance records is further evidence of G-E's ability to design and produce electrical systems and individual components for aircraft applications. This valuable experience is offered to airplane builders, engine builders, and operators who are cordially invited to consult with G-E on any electrical problem. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC



Firestone Announces

the New SuperFlex UNDERCARRIAGE

THE *First* AND *Only*
CONSISTING OF TIRES,

PREASSEMBLED UNITS FOR LIGHT PLANES
TUBESWHEELS, BRAKES AND STRUTS . . .

HERE'S good news for all who make or service light planes. Firestone pioneers again with the new SuperFlex Undercarriage, the first and only complete "packaged" undercarriage — tires, tubes, wheels, brakes and struts pre-assembled at the Firestone factory and ready to install.

Manufacturers can save valuable weight, time, space, labor and money by using Firestone SuperFlex pre-assembled undercarriages. The landing load is absorbed by rubber displacement and air compression resulting from the upward movement of the wheel. Recoil is positively controlled by the use of friction material.

Elimination of many parts used in conventional landing gears permits a welcome reduction in weight. Low

oscillation rate control and damping characteristics provide excellent taxiing qualities. There is no possibility of the landing gear sticking. Extension is positive and certain. There are no telescoping tubes, no oil compartments, no pecking glands.

Minimum overall section width and height make the Firestone SuperFlex landing gear ideal for retraction and permit lower center of gravity. Clean, compact design assures low drag in extended position.

Maintenance costs are remarkably low — service in less than one-year intervals is unnecessary, and the entire unit replacement of tire, tube, wheel, brake and absorption unit is easily and quickly accomplished by the removal of a few bolts and nuts.

For the best in music, listen to the "Voice of Firestone"
every Monday evening, over N. B. C. network

Copyright 1946 The Firestone Tire & Rubber Co.



FIRESTONE
THE CHAMPION
U.S.A.





ALONG NEW POTTER
SEAT NEW SEATING
POTTER SEAT
INSTALLATION



THE NEW POTTER
SEAT FROM
CONTRACT
REPAIRS
POTTER SEAT

The NEWLY DESIGNED POTTER SEAT

**Contact Carriers, Private and Business
Corporation Fliers, Industrial
Executives**

Available now to the industry is this revolution-
ary and improved aircraft seat which
has received enthusiastic reception from contract
and other transportation carriers. Adjustable
in any position, the Potter seat is fully patented.
Weighs only 32 lbs. It is light, durable and
extremely comfortable. Installations and re-
movals can be made instantly. Seats are avail-
able either in single or double combinations in
desired colors and fabrics.

Orders filled on priority basis.

L. POTTER Inc.
BETHPAGE • LONG ISLAND
PHONE HICKSVILLE 233-575

being combined whenever possible so that individual operations may be reduced and each employee do more operations directly on the aircraft. Usage of stations are being curtailed through shrinkage of plant use and through consolidation of outlying departments into the home plant. Reorganization is being held to a minimum commensurate with production quotas. Dozens of specialized departments have been closed and a general plan to render every employee a direct productive employee is being pressed. All of these problems are a direct result of curtailed military production, which irreversibly constituted the greatest portion of business by the large companies and without which they fear they cannot long survive.

Conklin Will Reconvert 40 Beechcrafts for CAA

A contract with CAA for the reversion of 40 G-3 Beechcrafts, and the reupping for spare parts of some others, has been announced by E. J. Conklin Aviation Corp., Richmond, Va. The planes have been returned by the British, who obtained them on lend-lease, and will be used by CAA inspectors. The reversion cost will be approximately \$40,000. The planes were accepted by the company at the Norfolk Naval Air Station, and landed at larger airports. The River is the Conklin plant at Norfolk.

Motor Firm Expands

Planning greatly expanded activity in the Southwest, Continental Motors Corp. has undertaken construction of a new \$250,000 assembly and service plant at Dallas. Under the direction of Bert Newland, who has been in charge of the Garland, Tex., plant, the new facility will be final assembly on Continental engines for the Southwestern territory, as well as service and overhaul work.

Timms Makes Furniture

Timms Aircraft Corp., through a subsidiary Timms Shuckert, Inc., has broadened its activities to produce aluminum furniture. Under contract with Douglas Metal Furniture Manufacturing Co., of New York, the Los Angeles aircraft firm will turn out 15,000 units of furniture. Items will include a desk-chair, large armchair, divan and table.

Nickel Plate Propeller Promises Lower Cost

Experimental blade developed as by-product of research for Navy by Glendale firm.

A nickel-plated propeller under development in Glendale, Calif., shows promise of being one of the year's most important aviation achievements.

For the personal aircraft industry it carries the potential offering of a metal propeller which should cost as much as a wood propeller yet have twice the life and be virtually free from maintenance problems.

Result of War Work—Under the direction of the Bristol Research Laboratory, Washington, D. C., the Bone Engineering Corp. is operating an experimental electro-forming and electro-plating laboratory. During the war the laboratory developed many products which were used in the fields of radar, radio and mechanics. The propeller is a by-product of the experimental work. It is created by applying to a pre-formed blade core, which may be shaped from wood, laminates, aluminum, magnesium, or other light-weight products, an electrolyte of nickel. It accurately controlled thickness.

New Under Test—An experimental blade, using as a core a standard wood blade, carries a metal sheath of 0.003-in. thickness for now in standard performance tests by the Navy Department. Dr. J. M. Carter, chief of development for Bone, declares the sheath thickness can be increased materially still to any value desired to provide necessary blade strength.

R. B. Leary, president of Bone Engineering, reports that interest in the project already has been shown by several propeller manufacturers.

In addition, Bone has had a tentative contract offer for 10,000 propellers. J. A. P. Propellers, Inc., which supply variable pitch wood props to Beech Aircraft, among others, representative of U. S. Propellers has admitted his firm's interest, and says they hope to ask CAA to begin type certification tests within two or three weeks.

A further indication of the interest the radical prop has aroused comes from the Army which will test the propeller in the West Coast.

Advantages Outlined—Principal economic advantage of the nickel-plated propeller is that it offers the durability advantages of a forged



Nickel-Plated Prop Dr. J. M. Carter, chief of development for Bone Engineering Corp., holds a cross cut out of a nickel-plated blade to show the uniform thickness of the sheathing which coats the core completely from blade root to tip.

aluminum or steel propeller for a fraction of the cost of the forged blade.

Also, it offers a reduction of the manufacturing cost of the blade core, which may be a plain, smooth shape and will require neither variable-pitch nor metal coping of the leading edge. The plating process can be controlled to give extra thickness to the leading edge of the finished blade. The plated blade may be laminated by sanding of the surface plate, and buffing will give a final desired smoothness.

Curtiss-Wright to Continue Making Military Motors

Taking cognizance of some of the reports regarding the future of Curtiss-Wright Corp. that have occurred in the industry from time to time, President Guy W. Vaughan has decided at least one "that C-W will not continue making aircraft."

"We shall continue to manufacture military airplanes and engines and propellers and various types of aircraft," Mr. Vaughan declared. "What we are now considering is only whether we should continue to manufacture commercial airplanes. We have not yet come to a decision on this question."

C-W and subsidiaries, Mr. Vaughan says, has a backlog of \$25,000,000.

Taylor Turbine Spurs U. S. Jet Competition

American firm licensed to produce Rolls-Royce, Pratt & Whitney engines, plus Jetco work.

Launching of a newly-formed U. S. firm to produce the British Rolls-Royce jet engines has added just one more competitor in an already over-crowded field in the opinion of industry representatives already engaged in jet engine work.

Furthermore, rather than the fear of competition of an admittedly fine engine has been the initial reaction of present manufacturers to the announcement that the Taylor Turbine Corp. has been granted rights to produce in this country the Rolls Royce and Derwent engines.

Does U. S. Companies—At present there are a dozen U. S. companies either in production or preparing to start production of jet engines. Among them are Pratt & Whitney, General Electric, Westinghouse, Pratt & Whitney, Wright Aeronautical and Allison are the largest. There are seven others potentially, at least, of considerable importance. Northrop-Hendy, Messers, Aeropet, Franklin Electric, Inc., De Laval Steam Turbine Co., Packard Motor Co. and G. M. Guanzara, the Pasadena, Calif. group working on research jet (Aviation News, Aug. 18, 1945).

Of that list, only Allison is in volume production, on the J-33 which powers the Lockheed P-48. But before the year is out, there should be others. They have already let contracts for aircraft utilizing other types of jet engines.

Into this well-explored field now comes Philip R. Taylor, a recognized engineer and production expert, and from the fall of 1944 until December, 1945, vice-president and general manager of Wright Aeronautical Co. Taylor, while still indebted on financing, facilities and other details, states that his firm will be located in northern New Jersey, where there is a reservoir of skilled labor. Initially, the corporation will be financed with private funds, although a public issue is planned for next year, at which time Taylor expects to be in production as the Nease and Derwent types of Rolls-Royce engines.

Plus Army Tests—Just as distribution of the contract that at least two American manufacturers (see) planning new aircraft around the Rolls-Royce power plant which would be responsible to design around existing jet projects. U. S. engine types are planned in new Army and Navy

airframe strength types, with modifications of the British-made engines by Rolls-Royce to conform to Army and Navy specifications."

This is the statement that industry observers are studying with most interest. There are too many points involved here, the alleged superiority of British jet two, a vague and abstract national pride.

The U. S. industry does not dispute the claim that the Avon and Derwent are the two most powerful jet engines now in production, primarily because the J-35 is the only other engine that has reached that stage. But even that statement must be qualified.

The Avon, with its thrust of 5,000 lbs. and the Derwent, developing better than 5,000 lbs. no doubt are the most powerful on a test block. However, U. S. engineers point out that power delivered to propel an aircraft is something else, and depends on the type of plane, and how much of the actual power must be sacrificed off to operate equipment in the aircraft.

Design Is Factor—For another thing, the purpose for which the plane is designed enters into the calculations. On the Avon, the J-35 may be fairly as effective as the British engines, although development costs fall the least there.

On the second point there is the feeling that at this time, in particular, there is probably a great deal of reluctance on the part of the Army and Navy to contract for equipment based on British designs, when both the services are emphasizing the necessity of retaining a strong domestic air industry.

That leads to the conclusion of U. S. observers that what Taylor actually is trying to do is the Bal-

royce because of the experience of the British in producing jet engines. There is a strong belief that when the Taylor firm produces engines, these will bear a U. S., not a British name, and that a commendable effort will be made to market the engines as U. S. engines—even though based on British patents.

Radical Dive Brakes Improve Slow-Down

Release of details on the radically new fuselage air brakes of the Douglas AD-1 (formerly F3D3) Skyraider has started a study by engineers who see a possible answer to an old problem: The "slowing down" in mid-air without any changes in the basic dimensions of form on the airplane.

Pilots have supplied considerable data to provide deceleration of the aircraft, although they are presently designed to give added lift. However, their extension is accompanied by positive pitching moments that vary with different plane designs and that require fast and accurate trim compensations by the pilot. Dive brakes, even with the perforations presented on the Douglas SBD Devastator, create turbulence that adversely affects wing and tail.

By installing retractable flat panels on the aft fuselage Douglas engineers have linked the force distribution between and created a new and highly effective aircraft slow-down surface. Although there may be obvious application in its slowest bomber deep speeds, engineers are speculating about their usefulness as non-military types.

In combination with flaps and ailerons they may provide an extremely



STRATOSPHERIC 'CHUTE'

Designed better to absorb the shock of a jump from extremely high altitudes, the "ribbons" parachute brags incorporated with the AAF Air National Command engineers was originally developed by the Germans for the use of pilots of the jet-propelled ME 262 fighter.

But yet air deceleration for landing multi-engine transport types increased all-weather flying, made possible by well-developed radio aids, have placed a premium on riding techniques.

For example, in instrument landing approaches, the danger of overshooting is more serious than under-shooting. In such a spot flaps cannot help and dive brakes might seriously interrupt the trim at a critical point. Fuselage air brakes might well prove a godsend at such a trying time, slowing the airplane quickly and safely.

The danger of engine failure during takeoff might be lessened considerably through the proper use of fuselage air brakes, which could provide a powerful braking and Ground run after landing could be on by such an installation.

The simplicity of these designs which require no particular aerodynamic shape or cross-section thereby permitting their being shaped to the desired portion of the airplane, and installation, which requires only hinges and a hydraulic or electric jacks, characterizes one of the major objections that pilots must now overcome.

PRIVATE FLYING

Aerona Challenges Piper Lead in Plane Production

Two-place Champions rolling out at 35 a day rise from Middletown plant while Chief line at Vandusia reaches five a day; Piper recovers from flood.

Aerona Aircraft Corporation, long a formidable challenger for the first place lightweight quantity production honor held by Piper Aircraft Corporation, may take the lead soon, if it has not already done so.

A visit at the main Aerona plant at Middletown, Ohio last week disclosed that two-place Champion Champions were rolling out at the rate of 35 a day, while additional assemblies were being put together for final assembly at the Vandusia, Ohio plant, where another line of six-place Chief Chiefs has reached the rate of five a day.

Piper, last week, back in production after long dry days because of a St. Louis river flood at Lock Haven, Pa., was putting forward an immediate daily production goal of 25 Cub tandem and four three-place Cruisers. A third competitor which later may give the two pre-war leaders competition is a closer run, Engineering & Research Corp., last week was rolling out the two-place Erapaces at a little better than 20 a day.

Plant Expansion—Aerona is still in the middle of a plant addition building program at Middletown and eventually has set a not too far distant goal of 50 planes a day. But

manufacturing has already shaken down in most departments to a steady flow which leaves little room for slack in the pre-war Aerona two-day schedule.

The wing of the post-war Aerona, for example, resembles the pre-war wing, but is made quite differently. The wing ribs, which used to be made out of 60 pieces of wood, metal, and steel, now are made of one-piece metal stampings, knicked out on a 75-ton hydraulic press, as quickly as the press can be operated.

The plane's all-metal doors are made of two pieces each, fastened by spot-welding. The wing still uses two wood spars, of laminated spruce, but these are pre-fabricated by a sub-contractor and ready for use. A sheet of aluminum is wrapped around the nose end of the ribs to form the leading edge and the fabric covering is quickly doled on, instead of using the laborious stretching process.

Head-Start Available—A survey of the plant still shows many evidences of hand-labor which are almost invisible as long as steel-plate and fabric construction is used. But the tubing framework now on a conveyor line to the welder work, and the plant also shows evi-

dence of careful planning for automatic flow and logical sequence of operations.

The new two-place metal fuselage Aerona Chief, which uses the two-control system developed by Fred Weick, and licensed to Aerona by the Engineering & Research Corp., is expected to be considerably safer of a standard airplane than anything the company has built so far. Most of the tedious handwork of welding framework for the fuselage will be eliminated and the company expects to turn out the succeeding members of the fuselage by machine work.

The Chief was first displayed to the public recently at the Brainerd, Ohio, air show and on a float in a Middletown parade, but no data on it has been given out by the company, since the first announcement of the design (Aviation News, March 8, 1945). The company indicates that the present version varies materially from the original specifications and that it may be changed quite a bit more before a gas turbo production starts the first of the year.

Chief Specifications—First estimated specifications set cruising speed 185 mph., top speed at 120 mph., landing speed at 50 mph., rate of climb at 650 ft./min., and range at 475 miles. The design was very much like the Erapace.

The trim tailfin arrangement used in other two-control planes, the Erapace, the Skyraider and the Stinson-Lincoln, has been replaced by one long vertical fin on the Chian. Two large automobile type doors give ready access to the cockpit. A type of landing gear arrangement is used for the main wheels while the nosewheel is steered by turning the control wheel, when the plane is taxiing.

Indications of strong popular de-



"Brazing In" Broken In going with the fuselage brake project, Douglas Aircraft Co. tried many approaches, of which one of the most unusual was this "brazing in," or "brazing in" installation as a HUD.



Runway Middletown Approximately 50 airplanes, at least 40 of which are brand-new Aerona Chiefs, ready to be flown away from Middletown, Ohio, are shown in this aerial photo of the Aerona Aircraft wing plant at Middletown, Ohio, municipal airport, where airplanes are currently rolling out at the rate of 35 a day.

mand for simplified control and all-weather capabilities make the Champ a likely contender on the lightplane market. One Aerostar dealer advised his company some months back that he expected to sell many more Champs than any other model his company had produced.

The Vandalia assembly plant, a hangar of the former AAF modification center at Dayton municipal airport, is equipped with a railroad spur and is used for a final staging base by Aerostar. Planes which are to be shipped by rail *loosely* are flown to the Vandalia plant after they are built at Middletown. Wings of the planes are quickly detachable with only three major attachment fittings.

Up until now Aerostar has test-flown all its planes before sending them to its dealers, although there is no indication that the new CAA ruling permitting manufacturers to send out unassembled planes for final assembly and test-flight at the dealer's airport, a significant advantage.

The gains in production efficiency are expected to be reflected ultimately in lower prices. President John Friedlander has stated, "We hope" that within two or three years the price for a plane comparable to the Champ can be reduced from its current level of \$22,200 to around \$17,750. "When we really let our stride we'll do a lot better than that," he adds.



Stamped Ribs: One-piece stamped aluminum ribs in the wings of new Aerostar Champs and Chieftans are typical of the production advances which the Middletown, Ohio plant has made since its start-up. As late as August 1960, wood wings made of 60 pieces laboriously assembled in a jig and glued under pressure, overnight, were used, by Aerostar in its planes.

Briefing For Private Flying

AL BENNETT'S AIRSHIP—A long-overdue but practical demonstration of the utility of the lightplane as a commuter's vehicle is concluded with the move of Al Bennett, from Aerostar's home plant at Middletown, Ohio, where he has been sales director for the past two years, to New York, where he becomes Aerostar's distributor for the metropolitan New York area and some surrounding counties. During most of his stay in Ohio, Bennett has been living the life of a country squire, on a little farm about 10 miles west of the Middletown, Ohio, airport, where the Aerostar plant is located. And he has been commuting by lightplane almost daily between the farm and plant, in less time and effort than would be necessary in various other modes of transportation. He even has been on the beach when he felt so inclined.

BETWEEN BARN AND BIRD—With Bennett at the controls of a new Aerostar "Champion," we made our first and probably our last visit to his home hangar-ship last week. The strip is about 1400 ft. long and about 50 ft. wide at its narrowest point, between a barn and tree. We wouldn't recommend it, and we feel sure CAA wouldn't either, for the average lightplane pilot, but Bennett has been flying lightplanes for a long time, and made his landings and takeoffs in the strip's narrow confines with ease. Use of the place for commuting left the Bennett family satisfied for his wife's use, and thus eliminated need for two cars.

SPEEDWAY FLYERS' REPORT—Roemer-Parke Airport, three quarters of a mile from the Indianapolis Speedway, did a record business on May 31, as a result of private flyers coming in to see the 500-mile race, Douglas C. Fletcher, manager, reports. A total of 360 planes, whose owners attended the race, were accommodated during the day, and left before sunset, with 310 planes taking off from the 10-minute part in one period of an hour and 40 minutes, in the late afternoon. A temporary control tower was set up for the heavy traffic. A staff of 13 men handled the servicing and traffic, and one plane suffered as much as a scratched wingtip during the stay at the Indianapolis field of Paris Aeronautics Sales and Service, Fletcher reported. The total of 360 was more than twice the number of private planes which flew into Indianapolis Municipal airport for the month, and several times more than the number visiting any other private flyer's field, Fletcher said, due to the convenient location at Roemer-Parke field to the Speedway.

ARGENTINA'S TAXI STRIP—One small Kansas town, Argentina, has solved the problem of transportation from the local airport to the heart of the business district for flying farmers, shoppers and other plane users. One street, leading directly from the airport into the downtown district, has been set aside for use as a plane taxi strip, and a cleared space in the center of the district serves as a "bitting place" for the planes while owners are detouring their produce and picking up groceries. While the idea generally would be feasible only in a relatively small town, whose airport was close to the business district, it offers interesting possibilities in many of the small communities which depend on the surrounding farmers for much of their trade. Presumably the arrangement could be made effective by police traffic facilities once or twice a week, at the times when the greatest flow of traffic was expected, if it was not desirable to block the street to cars and other surface vehicles at all times. Such an arrangement on any large scale would give added proof to the redundancy of proposed airways, and the need for a grid of freeways, presumably by a patcher arrangement, either with a ring interchange, or a hub-and-spoke arrangement which would protect the passer-by on airports of other vehicles.

FISHERMAN'S AIRHAVEN—Sportsman's Flying Service recently dedicated its new Class I airport in the heart of the trout, bass and picker fishing area in Michigan, half way between Alpena and Gaylord, and 23 statute north of Mio. The 1600 feet has 1,500 ft. north-south runway, 1,100 ft. east-west runway, and 2,000 ft. southeast-southwest runway, all with clear approaches. Calm air available due to air currents with transportation provided between cabins, restaurant and being field. The device are provided. The service is headed by Bob DeFend, president, and George Roth, secretary-treasurer and manager.

—Alexander McWhirly

Rocket Boost Forecast For Lightplane Use

Aerost engineering studies determine possible applications for private planes.



Widespread use of small rocket auxiliary motors to supplement conventional powerplants on personal planes and to lift gliders and sailplanes up to soaring altitudes, is forecast as the result of recent engineering studies by Aerost Engineering Corp. (AEC) Inc., a Redwood City, Calif., Calif.

The manufacturer, which pioneered in producing JATO units for shortened takeoffs by army and navy planes during World War II, has previously assessed similar units for commercial transport, of DC-12 type and larger.

For Takeoff Power: For powered light aircraft, engineering studies indicate practical applications.

Use of the rocket motor to supplement thrust from conventional engines, on takeoff, enabling the aircraft to takeoff from any field or body of water at any altitude at which the aircraft can land safely.

Use of the auxiliary motor for standby in event of engine failure on takeoff or to extend gliding range to a safe landing field.

For gliders and sailplanes, studies indicate that the rocket motor can be used to eliminate the laborious methods now used to launch airplanes (winch tow, automobile tow, airplane tow) which are a principal drawback to mass widespread enjoyment of soaring and gliding.

For shortened takeoff at the powered lightplane, an auxiliary motor with 150 to 250 pounds thrust for 25 seconds is recommended; dependent on the weight involved. For a standby powerplant an auxiliary motor of from 250 to 350 pounds thrust, for 25 seconds would be required to insure any appreciable safety margin. At the sole source of power for a sailplane takeoff to an altitude above 1,000 ft. a rocket motor of 300 pounds thrust for 25 seconds would do the job for a sailplane with 975 lbs. gross weight (including the power source), the manufacturer reports.

Many Advantages:—Advantages of all these applications to the personal plane and sailplane pilot are all phase. Shortened takeoff for the powered lightplane would mean that small lakes or high altitude lakes previously unserviceable to the average light sailplane or sailplane.

Sailplane Rocket Takeoff: Use of rocket-assist for takeoff of gliders and sailplanes is expected by Aerost Engineering Corp. to lift soaring aircrafts to their required altitudes at the rate of 2,000 ft./min. eliminating the tedious work, auto or airplane tow launching. How the rocket was used, whether attached to a glider for takeoff, it shows in the artist's sketch.

the loaded, and 155 lbs. empty. Presently a similar size rocket motor would provide 900 lbs. thrust for 24 seconds. The expanded propellant charge can be replaced by a new cartridge type charge, after the jet motor is reventilated.

The manufacturer says the motor can be installed in its supporting brackets on the plane, easier than a bomb is placed in the bomb bay of a military plane, and that the motor can be removed from the manufacturer's ready for use, requiring no servicing. The motor may be attached to any substantial structural member of the plane, on wing or fuselage. The thrust is transferred from the rocket motor in the plane to be propelled, through attaching non-swivel joints during the motor sequence in the plane. A safety plug with a fusible diaphragm is provided in each motor to safeguard against excessive pressures that might accidentally be generated in the reaction chamber.

Sailplane Use:—On a sailplane, as described, a power source providing 300 lbs. thrust for 24 seconds, would give the glider a rate of climb of 3,000 ft./min. This would enable the pilot to attain an altitude of approximately 1,500 ft. or, including a margin for error in pilot technique and variations in runway surface, of 1,000 ft.

Small rocket motors have already been used successfully on the two-place Kerosene, by Aerost during 1941 tests of the armed takeoff principle held over for four years (Aeronautics News, June 18, 1945). Use of a rocket motor as an emergency power source for a lightplane was incorporated in the second phase design of Thomas Morley.

Following a Research Corp. contract (Aeronautics News, Jan. 11, 1945) although the Morley plane has never been built.

An Aerost Model Model 12A-1600 D-1 which provides 1,000 lbs. thrust for 12 seconds, weighs 208

Bell Helicopter Is Used For Mine Survey Work

A Bell helicopter has been chosen for probably the first use of a helicopter in mining prospecting, in the Canadian northwest.

The helicopter was flown to Toronto by Fred W. Carlson, Bell chief test pilot, for tests with mine-survey mine detection instruments at the DeHavilland Aircraft plant, Fullerton, the Lewis, the aerial geophysical party left for northern Canada, with helicopter, planes and trucks.

Hans Lundberg, mining engineer, is in charge of the prospecting group which is expected to test use of the helicopter with the mine-survey equipment, in having some areas where valuable mineral deposits are believed to be, in order to locate the deposits more precisely.

TRANSPORT

Vast Feeder Network Is Seen As Result of CAB Decisions

25,000 route miles covering 42 states and 25 new local carriers expected when final cases decided.

By CHARLES L. ADAMS

Twenty-five thousand route miles of linehaul services covering 42 states and the District of Columbia are in prospect for the nation after CAB has handed down its final decision in 31 case proceedings, half of which is scheduled for hearing July 22.

Analysis of the Board's first three opinions in regional cases, taken with executive recommendations in four other proceedings and public comment briefings, indicates, moreover, that the conclusion that close to 25 new local carriers will be authorized.

Six of these already have been certificated for three years in the Rocky Mountain area, on the West Coast and in Florida. The average system authorized covers slightly more than 1,900 route miles and serves 17 separate points. In aggregate, 103 different communities are included on the systems of the first six area findings. Of these, 73 points serve local carriers served from a certificated airline.

Executive Reports Constructive—Board's recommendation in the early cases were marked by commentaries completely absent from the recent reports on the Texas-Oklahoma and Southern areas. In these two alone, executives have favored certification of eight new feeders.

Recommendations in the New England case, which will be decided by CAB shortly call for one new feeder and in the North Central proceeding two more. This makes 17 local services already certificated or recommended in seven regions.

A complete cross-section of the nation, both geographically and economically, is included in these cases, supporting the conclusion that decisions and recommendations already made reflect a broad picture.

► **TWA For Atlanta**—The Middle Atlantic area was considered one of the least likely to show need for new feeders. But a public carrier's brief recommendations certification of two local services by Hudson Airlines, Inc., New York City, and Inland Airlines, Inc., El Paso, Md., and Inland Airlines' expansion of All American Airlines' existing route and extension of Air Commerce, Inc., of New York City for shuttle operations to the five largest nearby airports and a connecting service between New York and 27 outlying communities.

Only one area of major size has been passed over in the broad outline now developing—a three-state block comprising North Dakota, South Dakota and Nebraska. Even here, however, CAB may go beyond executive recommendations to give the comparatively small towns in



TWA "CHORE BOY":

Designed by TWA for ground servicing of its Corvairs, the 2,500 lb mobile was newsworthy for the first time five production, motor repairs, and electrical power to engines. One man operates the unit, which is powered by a gasoline engine. TWA says it costs two men's time and eliminates two pieces of ramp equipment.



CARGO DOOR CHANGE

United Air Lines is doubling the width of the doors on its new DC-7C's, as seen above. A new door frame was designed, built to equalize stress, adding about 60 lb. to the weight of each plane. New steps are being studied at the line's Chicago base.

the region a chance to prove the existence of sufficient feeder traffic potential. Three other states, Maine, Vermont and Michigan, have not been recommended for feeder service in cases already heard.

In aggregate findings, the new local routes will be far smaller than those already operating in the nation's air picture. However, the more than 400 communities on feeder systems would far exceed the 227 underserved, even including airline service from certificate holders in April of this year.

► **Need Two Year Test**—Whether the nation's feeder network is successfully practiced probably will not be known for at least two years. Often heard in the industry is the opinion that CAB is set on setting up large numbers of feed carriers which soon will be clanking heavily to additional routes and connections from certificate provisions to permit through service.

Some skeptics believe the feeders will hold their own without heavy subsidy in prospect years but will experience at least complete drying up of business during depression periods. CAB executives are frank in the opinion that cost estimates prepared by feeder applicants are often outrageously optimistic. They praise, however, the great record of trucklines, which have not been helpful in presenting any sort of proposed new operation.

Increased equipment costs, higher

wages, over-capacity and operation of systems considerably smaller than those applied for probably will make unrealistic many cost estimates by feeder applicants. Requests for mail pay between 25 and 40 cents a mile are expected to predominate when CAB undertakes to fix compensation.

ATA Assails Pilots' Shorter-Flight Request

Broads ALPA proposal for 7-hour limitation as "kiss pay for less work" policy.

More pay for less work, rather than safety considerations, is seen by the Air Transport Association in the active behind the Air Line Pilots Association's recent request that CAB reduce present eight hr.-per-day flight time limitation to seven hours. ATA, in its brief to the Board's investigation of the relationship between maximum hours of duty and air carrier safety (Aviation News, May 13), again cautioned CAB to be alert against "underbidding" in the industry.

The airline also criticized ALPA for opposing interpretation of Part 61 provisions into Part 63 of the Civil Air Regulations. The change would permit domestic carriers to schedule flights for a maximum of 12 instead of eight hours of duty. Complete reports filed with CAB, which just released the figures, show revenue miles flown increased from 13,682,415 in January 1946, to 20,387,605 in January 1946, but

Domestic flights of over eight hours should be permitted only if the amended regulation specifically requires that another qualified first pilot be included as the third crew member, ALPA stated.

► **ATA Counters**—ATA countered that flight time provisions of Part 61 were based on more extensive experience than similar sections in Part 63, adding that the equipment used and the route increased might require that the third crew member be a navigator, instructor or radio operator instead of another pilot.

The current took shop issue with ALPA's claim that flights exceeding 300 miles on the high-speed planes would prove most delayed on pilots than the 150-300 mph speeds of pre-war transport equipment. Medical science has found, ATA said, that speed of acciden-

tions and deceleration create bodily stress, but speed through space in itself has no effect on the onboard and does not produce added fatigue. Moreover, 16-hour laws—ALPA's stand for a Civil Air Regulation placing in effect an overall law on duty rating of 12 hours was strongly opposed by ATA. At present the airlines voluntarily observe an on-duty maximum of 16 hours, and ATA took a lot of less than 34 hours in any 24-hour period would involve serious disadvantages to the public, serious management and the pilots themselves.

In actual practice, ATA claimed, pilots would spend more time away from home (a factor in fatigue) under the 12-hour limitation than under the 16-hour arrangement because of the most frequent necessity for "dead-heading" back to their base.

ATA declared the 16-hour limitation can not be based by assumption because it has always been the pilots' prerogative to refuse to fly if they do not feel physically fit.

Domestic Lines Lose

Twenty domestic air carriers, including All American Airlines, Caribbean Airlines, and Hawaiian Airlines, suffered a net operating loss of \$1,359,490 during the first month of 1946, compared with a net profit of \$4,479,020 in January, 1945.

Complete reports filed with CAB, which just released the figures, show revenue miles flown increased from 13,682,415 in January 1946, to 20,387,605 in January 1946, but



Northwest Orders Martin 303's. Company drawing shows seating arrangement in Martin 303, of which Northwest Airlines recently purchased 40 at a cost of more than \$16,000,000. Passenger capacity is 31-33 in the reclining seats and 42 in the lounge (Northwest Airlines drawing.)

operating expenses jumped from \$11,550,333 to \$19,845,094. Passenger revenue was up from \$14,831,693 to \$19,397,176, while average Northwest gross was \$24,059 to \$23,327, and expense and freight from \$9,024,584 to \$9,024,137.

Northwest Airlines Orders 40 Martin 303's

Second engine order for 300-hp Martin 303's has gone to The Glenn L. Martin Co. from Northwest Airlines, which is buying 40 of the two-engine ships at a cost over \$16,000,000.

Earlier this year United Air Lines announced it was purchasing 33 of the 303's at about \$4,600,000, with option to buy 30 more (Aviation News, Jan. 29).

The 303 differs from Martin's Model 303, which several of the carriers have on order, in that its cabin will be pressurized and arranged differently. The higher-powered engines will be equipped with exhaust jets to increase its speed. Cruising speed for the 303 will be about 370 mph, against 360 for the 303.

Northwest expects to put the first 323 into service next summer, and have all 40 flying by the end of March, 1946. Eventually, says COT Director, NWA president and general manager, these ships are expected to replace Northwest's DC-4's and DC-4's.

Announcement of the 303 purchase follows by less than three months the company's order for 30

Basic Stratoconverters for \$10,000-100. The Martin planes will be used to feed passengers to stopping points for the larger ship.

Northwest engineers say production of the 300 seats will make it possible to provide a 5,000-5,500 cabin altitude when the plane is at 16,000 ft. With a passenger capacity of 300 seats, the Martin will give NWA 1,200 seats, or more than double its present DC-3 and DC-4 capacity.

Free and rear doors, the latter with integral loading ramps, will speed passenger handling.

PICAO Air Freedom Deadlock Is Unbroken

Chief progress in mutual field air search code, AlPA and program to begin.

MONTREAL (Special)—The first Assembly of the Provisional International Civil Aviation Organization has ended a three-week meeting with policy established on a number of problems relating to international civil aviation, but with the controversial commercial rights or "third freedoms" question still no nearer solution.

Chief progress was made in the technical field, and PICAO now has the tools to go about building adequate air navigation facilities wherever needed by world airlines.

The final meeting of the Assembly made the organization the trustee for arranging financing of necessary equipment where the nations in which such facilities may be located are unable to afford the cost, and it agreed on no particular security such as the high seas.

Principal immediate problem is

the pending operation of weather ships across the North Atlantic. A total of 13 vessels is considered the minimum need. Yearly upkeep cost is more than half a million dollars each.

PICAO's mutual aid program also will be needed to aid Greece in establishing its airfield. Athens airport, gateway from Europe to the Far East, was largely destroyed by the German occupation, and the Greek Government already has sought PICAO's assistance.

In the final days of the assembly meeting, PICAO chose Montreal as seat of the permanent organization, and gave up hope of Russia's joining. The first seat on the Western Council, previously left vacant as a tick invitation to the Soviet, was taken by RARE Argentina last but after being proposed by her own delegate.

Committee Counters ALPA Pay Points

Frye charges union leaders with lack of technology, pilot representatives deny allegations.

Airline counter-arguments to the ALPA higher-pay claims are now circulating in at least another week. Thereafter, the three-man New York panel will study the evidence, in preparation for a report July 7.

E. I. Whysall, of NWA, submitted counter-arguments prepared by the Airline Negotiating Committee, ranging practices in other fields. Pay of cargo handlers matters, he said, is raised from \$460 up to \$300, depending on increased weight of a vessel up to 17,000 lbs. Truck drivers it was brought out, get 12.5% in raises for as much as a 60% weight advance in loads

handled. Locomotive engineers earn up to 14.5% more for a 61% up in the weight category.

Since the Ford Thunder was a standard when DeSoto 41 was first effective, Whysall pointed to a policy increase of 35% over minimum, as weight of transports rose 3,685 lb.

High point of the week's testimony was a charge by TWA's Jack Frye that ALPA leadership is impeding technological advances. Off the record of the hearings, ALPA representatives vigorously denied this Jack Frye. "Since the end of the year, we have suffered some pretty extreme losses, and we found it necessary to secure an additional credit of \$140,000,000. We were almost prevented from getting that credit due to the threatened pilot's strike. In fact until the Presidential Board was appointed, Repeatable Life Assurance refused to sign the agreement."

Losses, he continued, were almost caused by pilots refused to bid (volunteer) on flying of 4-engine equipment overseas when TWA was awarded its international routes. The line had to order jumbo pilots to take over, said Frye.

\$54,000,000 Mail Pay For 1947 Is Approved

House-passed allotment of \$54,000,000 for domestic airmail and \$10,000,000 for foreign airmail service for the coming year were approved by the Senate Appropriations Committee in reporting out the fiscal 1947 Post Office Department bill. The allotment compares with estimated expenditures of \$53,325,000 for domestic airmail and \$14,836,000 for foreign airmail during the present fiscal year.

The \$10,000,000 for domestic airmail—\$1,800,000 below the budget Bureau proposal—and the \$33,000,000 for foreign airmail cannot be taken as an accurate indication of the actual amount to be spent for airmail services during the coming year. Post Office Department requests Congress for more minimum airmail allocations in the regular appropriation bill, then requests discretionary appropriations as development requires.

The \$3,000,000 for foreign airmail is regarded as a "taken" appropriation to provide the Post Office with working capital for foreign airmail contracts until international airmail rates are set by CAB and congressional bills for foreign airmail service can be more accurately calculated.

Post Office officials reported that the largest orders from the \$10,000,000 will be \$2,184,334 for airmail service over Pan American's Miami-Breenville and New Orleans-Portland and South American routes, \$17,677 for PAA's Seattle-Puerto Rico route, \$14,330 for PAA's North Atlantic route, \$300,000 for services on military planes, and \$187,672 for services over American Overseas' North Atlantic route. No allocation is included for service on TWA's New Atlantic route.

New BOAC Deal

SANTIAGO, Chile (McGraw-Hill World News)—Agreement in principle to establishment of a Buenos Aires-London air service by BOAC has been reached and details are being worked out through diplomatic channels. Britain has advised Chile occupied rights for the establishment of occasional services to England.

CAB SCHEDULE

- June 10, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 11, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 12, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 13, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 14, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 15, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 16, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 17, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 18, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 19, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 20, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 21, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 22, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 23, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 24, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 25, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 26, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 27, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 28, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 29, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).
- June 30, Exchange of articles in trade with airlines regarding the new rules for the Air Line Pilot's Professional Union (ALP) and the Air Line Pilots' Association (ALPA).

CAB ACTION

- June 10, United and West to start new airline from Western end of United line to Los Angeles.
- June 11, United and West to start new airline from Western end of United line to Los Angeles.
- June 12, United and West to start new airline from Western end of United line to Los Angeles.
- June 13, United and West to start new airline from Western end of United line to Los Angeles.
- June 14, United and West to start new airline from Western end of United line to Los Angeles.
- June 15, United and West to start new airline from Western end of United line to Los Angeles.
- June 16, United and West to start new airline from Western end of United line to Los Angeles.
- June 17, United and West to start new airline from Western end of United line to Los Angeles.
- June 18, United and West to start new airline from Western end of United line to Los Angeles.
- June 19, United and West to start new airline from Western end of United line to Los Angeles.
- June 20, United and West to start new airline from Western end of United line to Los Angeles.
- June 21, United and West to start new airline from Western end of United line to Los Angeles.
- June 22, United and West to start new airline from Western end of United line to Los Angeles.
- June 23, United and West to start new airline from Western end of United line to Los Angeles.
- June 24, United and West to start new airline from Western end of United line to Los Angeles.
- June 25, United and West to start new airline from Western end of United line to Los Angeles.
- June 26, United and West to start new airline from Western end of United line to Los Angeles.
- June 27, United and West to start new airline from Western end of United line to Los Angeles.
- June 28, United and West to start new airline from Western end of United line to Los Angeles.
- June 29, United and West to start new airline from Western end of United line to Los Angeles.
- June 30, United and West to start new airline from Western end of United line to Los Angeles.

Here's the plane that is first choice with America's top Executives



30 DAY DELIVERY

New Postwar Twin Engine D185 BEECHCRAFT

Post & Wilson Powered 7 or 8-Place Executive Transport. Completely Equipped for All-Weather Flight—Single engine performance full instrument panel, Radio, Fuel Gauges, plus all Postwar Beechcraft refinements and improvements.

ASK FOR A DEMONSTRATION

ATLANTIC AVIATION CORPORATION

DONKEY MOTORS, Inc. President

55 WEST 43rd STREET  NEW YORK 18, N. Y.

ERIE Submerged TURBINE PUMP

7 HPS specialized turbine pump features a compact sturdy design that permits installation and servicing through a 4" tight opening. It is available in two series. Capabilities up to 75 GPM and from 100 to 500 GPM. It was specially developed for airport fueling systems and in loading many other applications where liquids are pumped from large tanks.

Write for your copy of booklet. Send us your gas, oil, or pumping problem.

ERIE FUELING SYSTEMS INCLUDE:

Gasoline Substations

Pumps

Fueling Nozzles

5 Gallon Oil Drums

Dark Oil Drums

Unloading Oil Tanks and Pumps

Portable Fuel Units for Airports

Gasoline Fuel Pumping Units

Naval Fueling Units

Oil Drums

Oil Drums

Oil Drums

Look to

ERIE

ERIC METER SYSTEMS, INC.

Main Office and Plant, Erie, Pa.



EASTERN'S DOUBLE-DOOR DC-4:

The new door Eastern Air Lines has installed on its DC-4s is a complete door and including of passengers are plainly shown in this recent photograph. At each of the doors is a set of Eastern's new adaptable ramps. The company is adding 30 DC-4's to its fleet at the rate of one weekly.

Now or Never

SOME NON-SCHEDULED operators are displaying symptoms of panic over CAB's regulatory plans for the industry at the very time they should be utilizing for their own concerns cause. They must achieve this *now or never*.

The Civil Aeronautics Board in the past has proven time after time that it has an earnest interest in the problems of industry, and has repeatedly shown a give and take attitude to an extent seldom encountered in other Federal aviation agencies. This interest in the problems of the aviation businessman has been most evident in generous time limits set for industry to make up its mind, and the number of changes it has made in the final regulations to meet the most urgent needs of industry.

It is absolutely necessary, therefore, that the non-scheduled operators make their united views known to

CAB on the proposed amended exemption order which is now being circulated for industry comment. While the Board's definition of non-scheduled service laid down very restrictive limits, this definition will to a large extent be superseded by the amendment to the exemption order which, in its present form, limits operators to not more than 10 round trips a month between any two points.

That is the battleground on which the operators have the opportunity to fight for their future. Their comments are due at CAB by July 22. The Board's statement showed a willingness to consider the operators' views in regard to the setting of a fair frequency limit.

Operators will have only themselves to blame should the Board, lacking comprehensive contrary views, revise the present limit.

Are We Neglecting The Missile?

PROBABLY THE MOST surprising trend noted at the recent Air Materiel Command press conference at Wright Field, Ohio, was the constant emphasis on future piloted military aircraft by top AAF research and development heads, overshadowing the immediate needs of the guided missile.

In contrast to the writing of many so-called military experts in recent months, Maj. Gen. Curtis LeMay, Assistant Chief of Air Staff for Research & Development, told the press group: "The new weapons, the long-range missiles, are not available now, will not be for some time, and perhaps never if we do not get sufficient research funds." He described piloted aircraft as "weapons for immediate use until the long range missiles are ready."

It is safe to assume that the AAF was keeping the lid on its best secrets, despite the frank discussions and display of much hitherto secret equipment.

Yet the disquieting impression prevailed that the AAF development chiefs were putting most of their chips on the immediate development of faster and

better armed piloted craft, while they carried on guided missile development with their left hand.

Some critics of the Army's air research program during the war have accused that the "old school" AAF officers, many of them pilots, are prejudiced against this strange interloper, the pilotless missile.

After the German developments of the V-1 and V-2 bomboms, American interest in this form of combat was, albeit belatedly, obviously more keen. But nearly two years after the V-2 appeared, the military scientists of this country have not yet announced anything better, and are still making tests with the German missile, although it is known that a few developments of piloted planes, but on long-range missiles.

If military aviation research in this country is not benefiting from the lessons of World War II, and is not putting forth strong efforts not only toward development of piloted planes, but on long-range missiles and pilotless interceptors as well, both by our progressive aircraft industry, a revision in our development planning is desperately needed.

ROBERT H. WOOD



TIP TO A MAN ABOUT TO BUY A TAYLORCRAFT

Look, nobody's happier for you than we are. You're on the brink of a new way of having fun—as well as doing business. We're all for you.

But take our advice. When it comes to facts and figures for your plane—there's only one kind to use—the *real* one.

Throughout the great Middle West, we think that means Phillips Aviation Products. Apparently a bit of other

people think so, too. For you'll find the big orange-and-black "66" sign at great airports and small from the Dakotas to the Texas Panhandle.

Ask for Phillips. And we know you'll appreciate the fact that we've gone to a great deal of trouble to speed a plentiful supply of unexcelled *fact* out one fast to every Phillips air-field tack. Let's get acquainted.

We'll be seeing you!

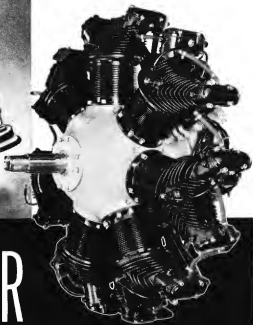


AVIATION GASOLINE

. . . MEASURED in Millions of HOURS



When you select an Aircraft Engine for the airplane you will fly, RELIABILITY is the primary consideration . . . you can measure WARNER RELIABILITY in MILLIONS of FLIGHT HOURS



WARNER

Aircraft

ENGINES

165 HP and 185 HP

WARNER AIRCRAFT CORPORATION • Detroit 5, Michigan